

Testing Objectives- There are a series of Boiler Tests which are being requested following the modifications which have been made to the Unit 1 boiler. The Unit 1 Major Outage(4 week) modifications consisted of installing an overfire air system and extending the superheater platen section. The objective of the POST-outage testing is as follows:

State of Utah- Required Testing- document operating conditions after the Overfire Air System has been installed. POST-outage testing is being conducted on the request from the Utah Division of Air Quality based on concerns with an increase in CO emission levels, operating with the overfire air system. The Boiler Testing will be at POST-Outage test conditions (conducted on 6/10-12/2003) at a Load of 950 MWgross, NO Westridge coal (best if SUFCO is straight), O2%, CO, NOx and Overfire Air% varies (see Boiler Test Conditions and Operational Test Setup).

Test Personal: The testing is being conducted by IPSC Engineering who is leasing test quality gas analyzers from Power Generation Technologies (PGT).

Test Coordinators- Garry Christensen and Aaron Nissen
OFA System Controls and Dampers- Ken Neilson & Phil Hailes
Gas Analyzers and Test Grid- Garry Christensen & Rob Jeffery
Coal & Fly Ash sample collection- Dave Spence & Bill Tanner
Fly ash sample collection- - ISG Rod Hansen, Rick Fowles/ Kurt Aldredge

Test Method- Testing will utilize the PI data acquisition system to document test conditions. In addition, a test grid is setup at the boiler outlet (11th floor) using 14 test probes at four different depths for a total of 56 points. The gas sampling system is setup with both east and west side averaging systems consisting of bubblers, vacuum pumps, chillers and desiccant filters. The cooled, dry, filtered gas samples are then analyzed for O2, CO2, CO and NOx. Thermocouples are also at each location to get averaged boiler gas outlet temperatures.

NOTE, we will utilize the O2 measurement at the boiler outlet. We are seeing a bias between station O2 and the O2 at the boiler outlet grid. The O2% at the boiler outlet, however, agrees with higher Air Flow shown in CCS, correlates with the higher ID Fan rpm and amps, plus correlates with higher NOx and low CO levels. As part of the testing, we will try to reconcile why we have high station O2 levels.

In addition to east and west side averaged gas conditions, individual test points will also be taken during a separate test to develop backpass test grid profiles. These profiles will include O2, CO, NOx and temperatures which will be used to troubleshoot and diagnosis burner setup and secondary air plus overfire air flow balancing.

OFA System 1/3 and 2/3 dampers plus OFA secondary air inlet dampers will need position checked during the course of the testing.

Fly ash samples will also be taken and correlated with the test results. We will need 2 Operators to help support fly ash sample collection. ISG will be collecting the fly ash samples at each of the different test points. All fly ash hopper rows need to be available (no maintenance work) and hoppers will need to be pulled down prior to the test (night shift) and between each test point.

Coal samples will also be taken throughout the test period at the coal feeder inlet (test taps installed special for testing). Note: there maybe a certain amount of coal spillage created while collecting these coal samples. Bottom ash samples will also be collected.

Boiler Performance Testing- Each test point needs 2 hours, allowing ½ to 1 hour between test points to lower O2, pull fly ash and sootblow for temperatures. Prior to each test period (daily), the gas analyzers need to be started, warmed up and calibrated. This process takes 1 to 1 ½ hours to complete. During this time, all tubing, bubblers, chillers, desiccant filters, and dust filters will be checked out.